US-PAT-NO: 5583070

DOCUMENT-IDENTIFIER: US 5583070 A

TITLE: Process to form rugged polycrystalline silicon surfaces

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It is yet another object of this invention to produce the rugged surface polysilicon layer via specific deposition conditions, and specific post deposition, insitu annealing conditions.

FIG. 4, shows the creation of the upper electrode, or cell plate, again fabricated using LPCVD, insitu doped, polysilicon, grown at a temperature between about 580.degree. to 650.degree. C., to a thickness between about 750 to 8500 Angstroms, using SiH4 and PH3. This is shown as layer 14, in FIG. 4. Standard photolithographic procedures, followed by an HBr and C12 RIE process, allow the desired cell plate configuration to be obtained. After photoresist removal, again via the use of oxygen plasma ashing, followed by wet chemical cleans, an insulator layer, 15, is deposited using LPCVD processing, at a temperature between about 650.degree. to 950.degree. C. to a thickness between about 1000 to 2000 Angstroms. Standard photolithographic procedures and RIE processing, using CHF3, are used to open contact hole 16, to N+ region, 7. After photoresist removal and wet cleans, a deposition of aluminum - copper - silicon, or tungsten is performed to a thickness between about 3000 to 5000 Angstroms, using r.f. sputtering for the aluminum based metallization, while chemical vapor deposition is used to provide the tungsten films. Again

photolithographic and RIE procedures, using a C12 chemistry, are employed to form metal structure, 17, shown schematically in FIG. 5. Photoresist removal, using oxygen plasma ashing, followed by careful wet cleans are then performed.

6. The method of claim 1, wherein said insitu annealing is performed, in an LPCVD system, at a temperature between about 530.degree. to 600.degree. C., at a pressure between about 0.2 to 1.0 Torr.

15. The method of claim 10, wherein said insitu annealing, of said amorphous, third polysilicon layer is performed, in an LPCVD system, at a temperature between about 530.degree. to 600.degree. C., at a pressure between about 0.2 to 1.0 Torr.

16. The method of claim 10, wherein surface area of said roughened surface, third polysilicon layer, is increased by between about 40 to 80%, as a result of conversion from said amorphous, third polysilicon layer, via use of said insitu annealing.

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TITLE: Micro- and nano-porous metallic structures

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It was found that in-situ annealing can be accomplished by performing the
de-alloying at about 50.degree.-90.degree. C. and preferably 90.degree. C.
In-situ annealing increased the as-corroded ductility of the resulting porous
structures. Moreover, insitu annealing enabled the manufacture of membranes
with geometries other than planar which were stable mechanically.